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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,730	09/17/2003	Hajime Noto	242927US2	2621

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EXAMINER

CHAWAN, SHEELA C

ART UNIT	PAPER NUMBER
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2624

NOTIFICATION DATE	DELIVERY MODE
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06/28/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/663,730	Applicant(s) NOTO ET AL.	
	Examiner Sheela C. Chawan	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The indicated allowability of claims 1-8 and 10-23 is withdrawn in view of the newly discovered reference(s) to Behzad Dariush et al. (Spatiotemporal analysis of face profiles: Detection, segmentation, and registration –IEEE 1998). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 9, 12-13 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Yang et al. (US 5,923,380).

As to claim 1, Yang et al. disclose a pseudo 3D image generating apparatus (Figure 1) that generates a pseudo three dimensional image of a subject (122 is a subject) from a plurality of images (imaging devices 106 and 108 are used to obtain a plurality of images of the subject 122) captured in various illumination conditions (visible light source 136 and IR lights 110, 116, 118 are used to provide various illumination conditions), comprising:

an image storing unit that stores the images (column 6, lines 24-28; the microprocessor 102 collects and stores images);

a depth computing unit that computes a pseudo depth value for a plurality of corresponding pixels, each of the stored images containing one of the corresponding pixels, based on an operation between pixel values of the corresponding pixels (column 6, lines 24-38; the microprocessor 102 corresponds to a depth computing unit; the microprocessor stores the images and computes the difference between intensities at corresponding pixels of the two IR images corresponding to the claimed feature of computing a pseudo depth value), wherein each of the stored images contains one of the corresponding pixel. Foreground regions and background regions of an image are determined on the basis of the computed differences of the image (corresponding to the claimed feature of generating a pseudo 3D image).

Claim 9 is a method claim corresponding to an apparatus claim 1 and therefore it is rejected for the same reasons.

Claim 12 is a method claim corresponding to an apparatus claim 4 and therefore it is rejected for the same reasons.

Claim 18 is similarly analyzed as claim 1 above and therefore similarly rejected.

As to claim 5, Yang et al. disclose the pseudo 3D image generating apparatus, further comprising an object extracting unit that extracts an object of the subject based on the pseudo depth values assigned to the corresponding pixels, the pseudo depth value being computed by said depth computing unit (column 6 line 46 to column 7 line 12, and column 9, lines 16-43; computing the difference of corresponding pixel values (corresponding to the claimed pseudo

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depth values) between two images, determining foreground object pixels and background pixels, hence extracting foreground regions and background regions (corresponding to the claimed feature of extracting an object of the subject), and the pseudo depth value being computed by the microprocessor (corresponding to the claimed depth computing unit). As such, to the extent the independent).

Claim 13 is a method claim corresponding to an apparatus claim 5 and therefore it is rejected for the same reasons.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-4, 6-8, 10-11 and 14-16 are rejected under 35 USC 103 9a) as being unpatentable over Yang et al. (US 5,923,380) as applied to claims 1, 5, 9, 12, 13 and 18 above and further in view of C. Marc Bastuscheck (technique for real time generation of range images IEEE 1989 –IDS).

Regarding claim 2, Yang discloses method for replacing the background of an image. Yang is silent about The pseudo 3D image generating apparatus wherein said depth computing unit reduces the resolution of the images, and computes the pseudo depth value for the corresponding pixels based on an operation between the pixel values of the corresponding pixels of the resolution-reduced images.

C. Marc Bastuscheck discloses technique for real time generation of range images. The system comprises of:

The pseudo 3D image generating apparatus wherein said depth computing unit reduces the resolution of the images, and computes the pseudo depth value for the corresponding pixels based on an operation between the pixel values of the corresponding pixels of the resolution-reduced images (abstract, page 262, introduction paragraph 1, paragraph 2, and page 266 paragraph 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Yang to include depth computing unit reduces the resolution of the images, and computes the pseudo depth value for the corresponding pixels based on an operation between the pixel values of the corresponding pixels of the resolution-reduced images. It would have been

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obvious to one of ordinary skill in the art at the time of the invention to have modified Yang by the teaching of C. Marc Bastuscheck it appears that real-time range sensors can be developed to improved devices based on known technology will lead to greatly improves range sensing speed and resolution, (as suggested by C. Marc Bastuscheck page 267 last paragraph of conclusion).

As to claim 3, see the rejection of claim 2 above.

As to claim 4, Yang et al. disclose the pseudo 3D image generating apparatus wherein, said depth computing unit assigns a discrete depth value to each pixel by comparing one of the difference and the ratio between the pixel values of the corresponding pixels of the images with a threshold value predetermined for each pixel (column 8 line 25 to column 9 line 15).

As to claims 6 and 14, Yang discloses the pseudo 3D image generating Apparatus as claimed in claim 5, wherein said depth computing unit assigns a discrete depth value to each pixel by comparing one of the difference and the ratio between the pixel values of the corresponding pixels with a threshold value predetermined for each pixel; and said object extracting unit extracts adjacent pixels of one of the images as the object, the assigned discrete depth values of the adjacent pixels being equal to each other (column 6, lines 46 to column 7, line 12, column 9, lines 16- 43).

As to claims 7 and 15, Yang discloses the pseudo 3D image generating apparatus as claimed in claim 6, wherein said depth computing unit fits a depth function to the object based on the discrete depth values (column 9, lines 55 to column 11, lines 9 and fig 6 and 7).

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As to claims 8 and 16 Yang discloses the pseudo 3D image generating apparatus as claimed in claim 6, wherein said depth computing unit smoothes the discrete depth values of the pixels in a predetermined range in one of the entire image, the peripheral portion of the object, and the object (column 6, lines 46 to column 7, line 12, column 9, lines 16- 43).

As to claim 10, see the rejection of claim 2 above.

As to claim 11, see the rejection of claim 2 above.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is. 571-272-7446. The examiner can normally be reached on Monday - Thursday 7.30 - 6.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen Lillis can be reached on 571-272-6928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sheela Chawan
Patent Examiner
Group Art Unit 2624
June 4, 2007


SHEELA CHAWAN
PRIMARY EXAMINER